PUBLIC HEALTH FOUNDATION OF INDIA

Global Antibiotic Resistance Partnership

Reflections from GARP Phase 1

India

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Overview

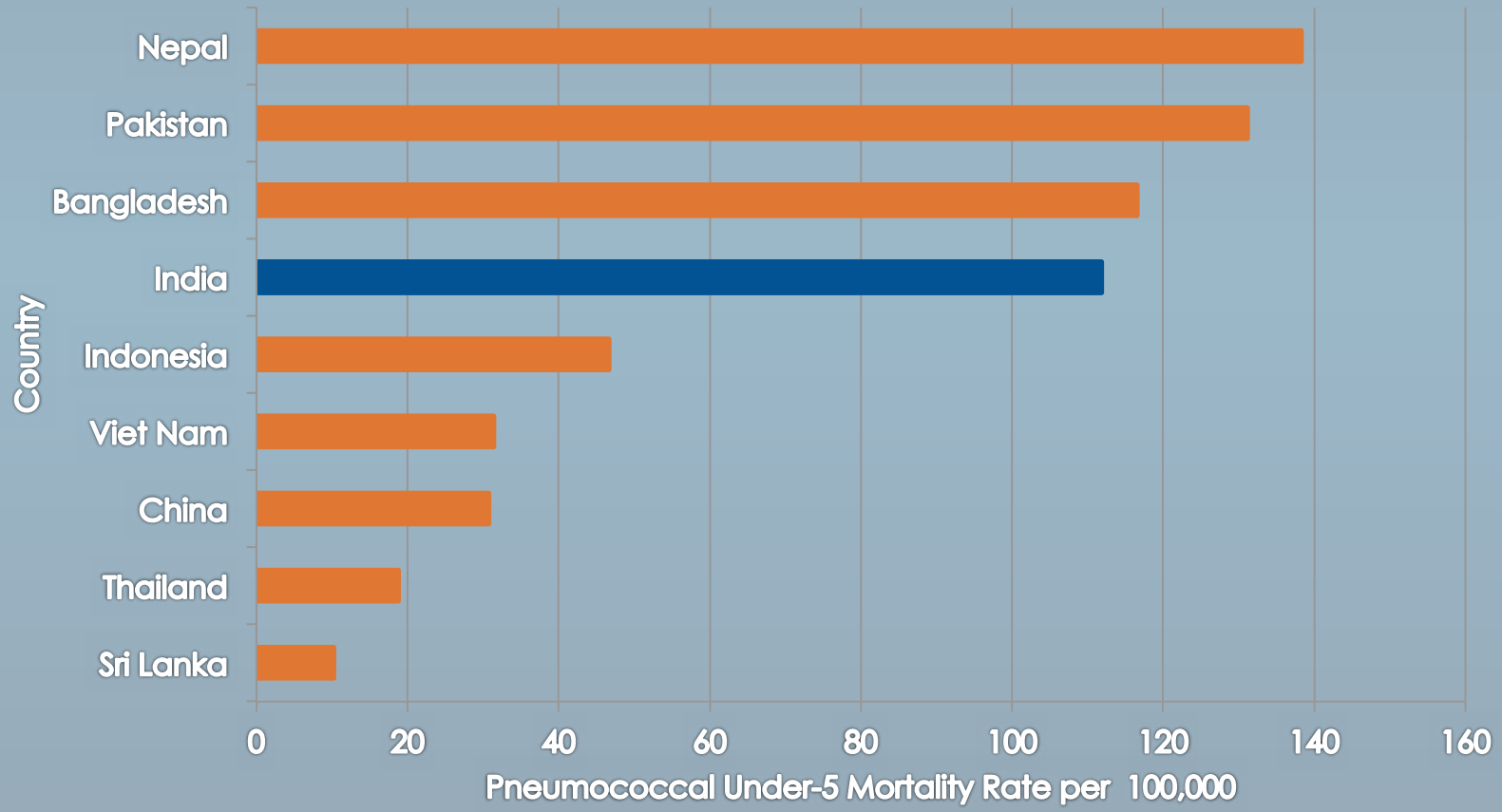
- Background for India
- GARP-India studies
- Policy Recommendations

Bacterial Disease Burden

- High bacterial disease burden
  - Pneumonia the #1 killer in children = Lack of access to antibiotics
  - Full immunization ~40%
- Most data from small hospital-based studies
- WHO study in 3 Indian cities found high levels of resistance in *E. coli*

Data source: World Health Organization. World Health Statistics. France. 2011.
Jha P, Laxminarayan R. Choosing Health. 2007.
Holloway K, Mathai E, et al. Geneva: World Health Organization. 2009 March.

High pneumococcal mortality rate for children under 5



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Data source: World Health Organization 2000

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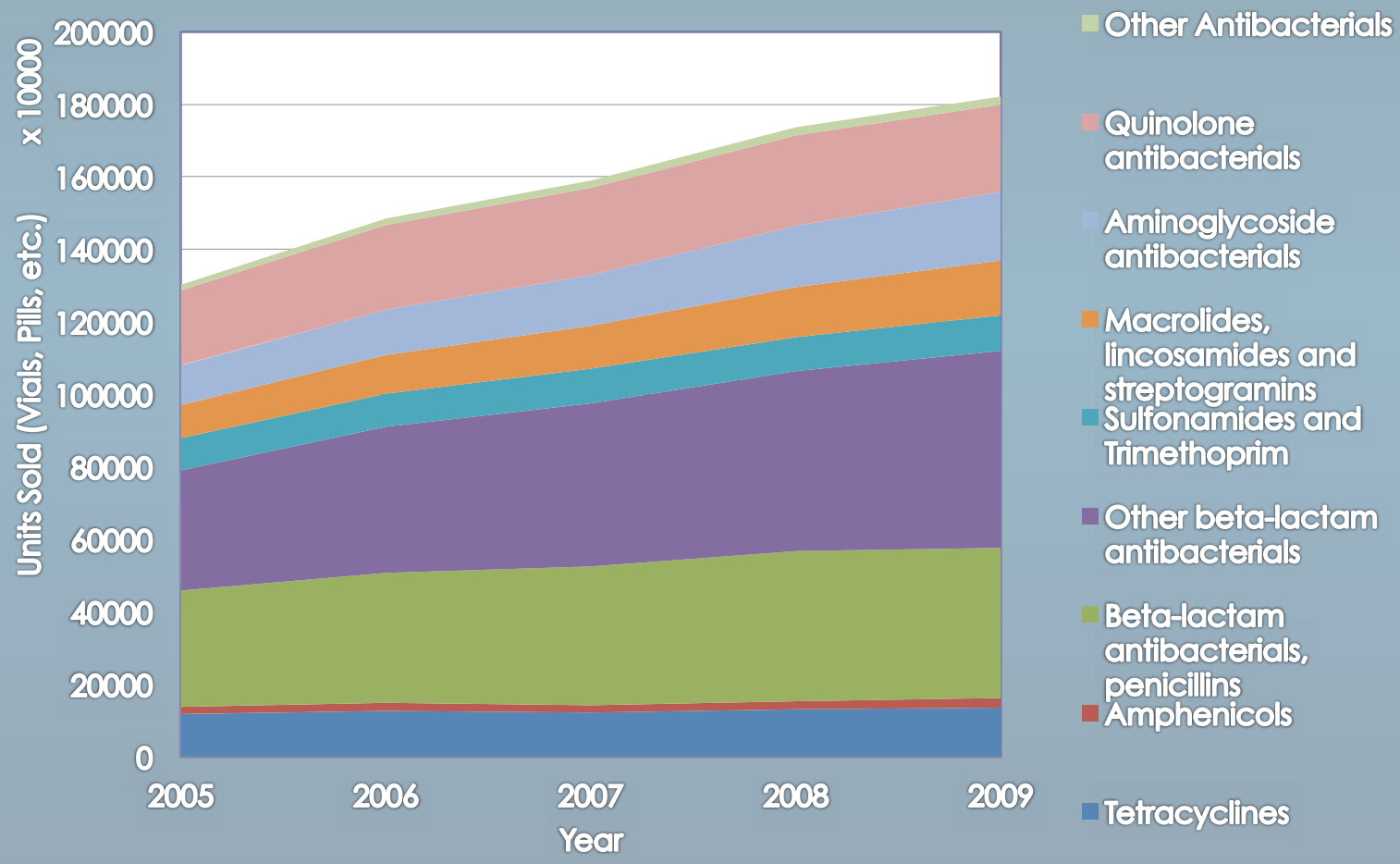
Increased Awareness of Resistance: NDM-1

- First reported in 2009 in a Swedish patient who had undergone surgery in New Delhi
- Isolated in hospitals in Chennai, Haryana, and UK National Reference Library
- Detected in drinking water and seepage
- Spurred creation of antibiotic task force by Ministry of Health and Family Welfare

Rising Antibiotic Use



Data source: Personal communication from IMS Health Information and Consulting Services-India, courtesy of Pfizer.

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GARP-India studies

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Antibiotic use in a rural district in South India

PIs: H Sudarshan and A Kotwani

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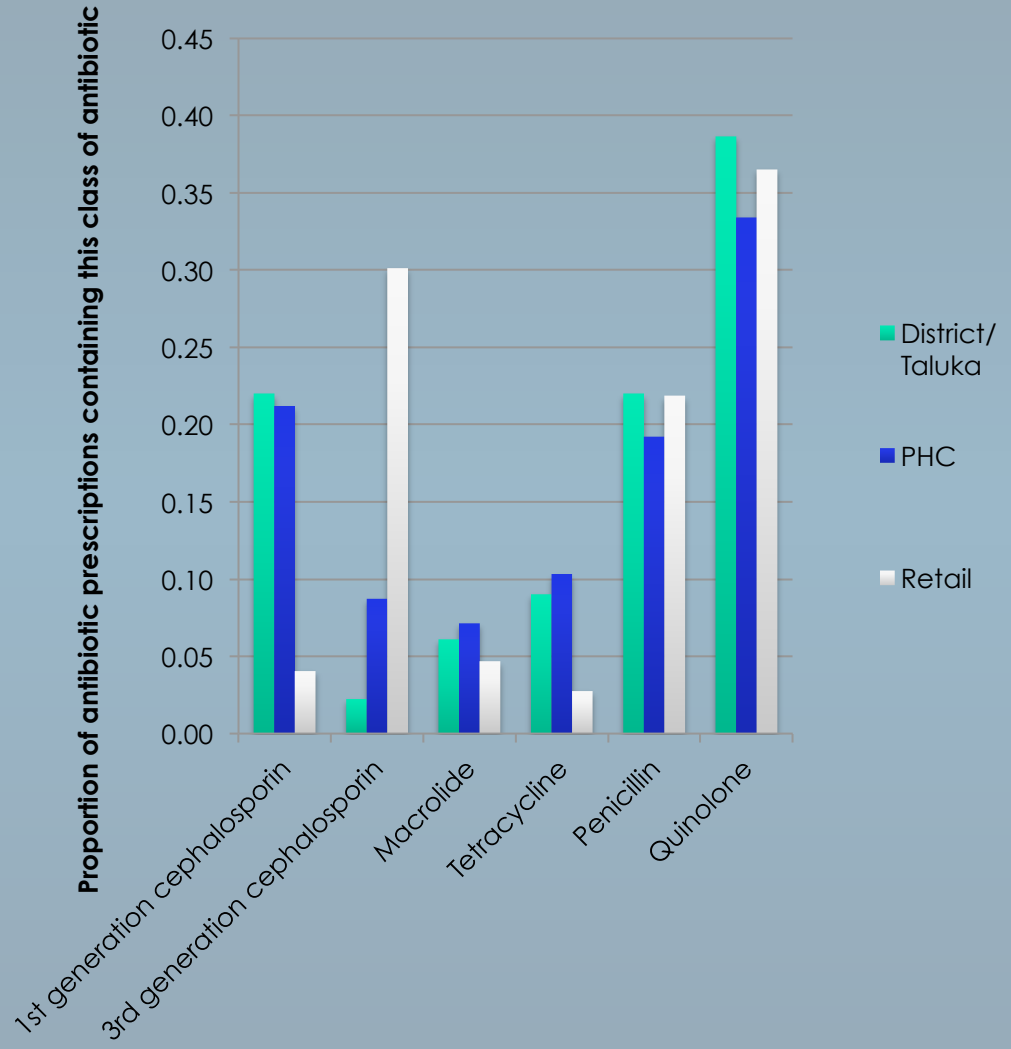
Results

- 1 district in Karnataka
- Exit interviews, purchase and stock data
- 35% of patients received an antibiotic
- 3% also received oral rehydration salts
- 3% of antibiotics dispensed without a prescription
- 89% received the amount prescribed to them
- Relationship with demographic variables

Prescribing practices at different types of facilities



Hospital-based Intervention on Prescribing

- What is the impact on hospital based physicians of simple feedback on their antibiotic prescribing rates as compared to their peers?
- Outcome: Defined daily doses /100 bed-days for major classes of antibiotics
- Prescribing rates ranged from 100 to nearly 300 defined daily doses / 100 bed-days
- Result: No decrease in use in either study arm
  - Need for more intensive interventions
  - A survey of doctors should shed light on reasons underlying the lack of response

POLICY RECOMMENDATIONS

Surveillance of Resistance & Use

Strategies

- Start with government hospitals in Delhi
- Create lab network and ensure quality control
- Sample prescriptions and conduct exit interviews, following World Health Organization methodology
- Make data accessible and understandable

Concerns

- Cooperation between hospitals and states
- Sustainability
- History of previous attempts

Restrict Over-The-Counter Prescribing

Strategy: Revised regulations

- No over-the-counter dispensing of antibiotics
- Some advanced antibiotics available only at tertiary hospitals

Concerns

- Opposition from pharmacists and patients
- Loss of access for some isolated populations

Background

- Over-the-counter prescribing of antibiotics illegal but not enforced
- Drugs comparatively cheap

Regulate Veterinary Use

Strategies

- Outlaw use of antibiotics most important for human health
- Ban non-therapeutic use
- Require washout period before slaughter
- Coordinated by inter-sectoral committee

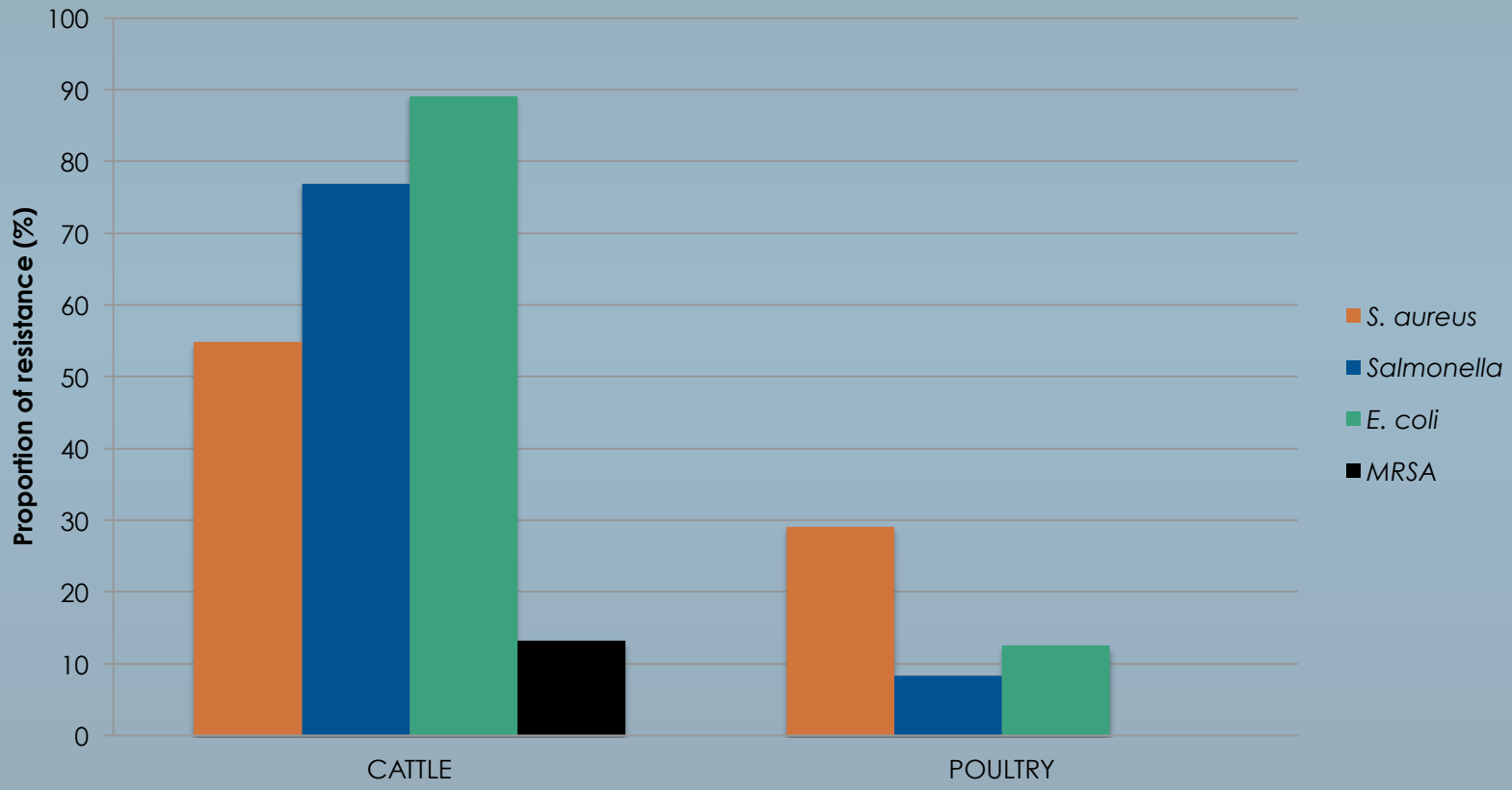
Concerns

- Enforcement
- Coordination

Background

- Domestic market: antibiotics only regulated in seafood
- Recent publicized study of antibiotics in honey raised awareness

Antibiotic-resistant bacteria in food animals in India



Data source: Arya, G., et al. (2008). Zoonoses and public health **55**(2): 89-98.
Dhanarani, T. S., et al. (2009). Poultry science **88**(7): 1381-1387.
Kumar, R., et al. (2011). Journal of biosciences **36**(1): 175-188.
Mehta, A., V. D., et al. (2007). The Journal of hospital infection **67**(2): 168-174.
Murugkar, H. V., et al. (2005). The Indian journal of medical research **122**(3): 237-242.
Rosenthal, V. D., et al. (2010). American journal of infection control **38**(2): 95-104 e102.
Singh, B. R., et al. (2007). Journal of Equine Veterinary Science **27**(6): 266-276.
Singh, B. R., et al. (2009). Journal of infection in developing countries **3**(2): 141-147.

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Improving Prescribing

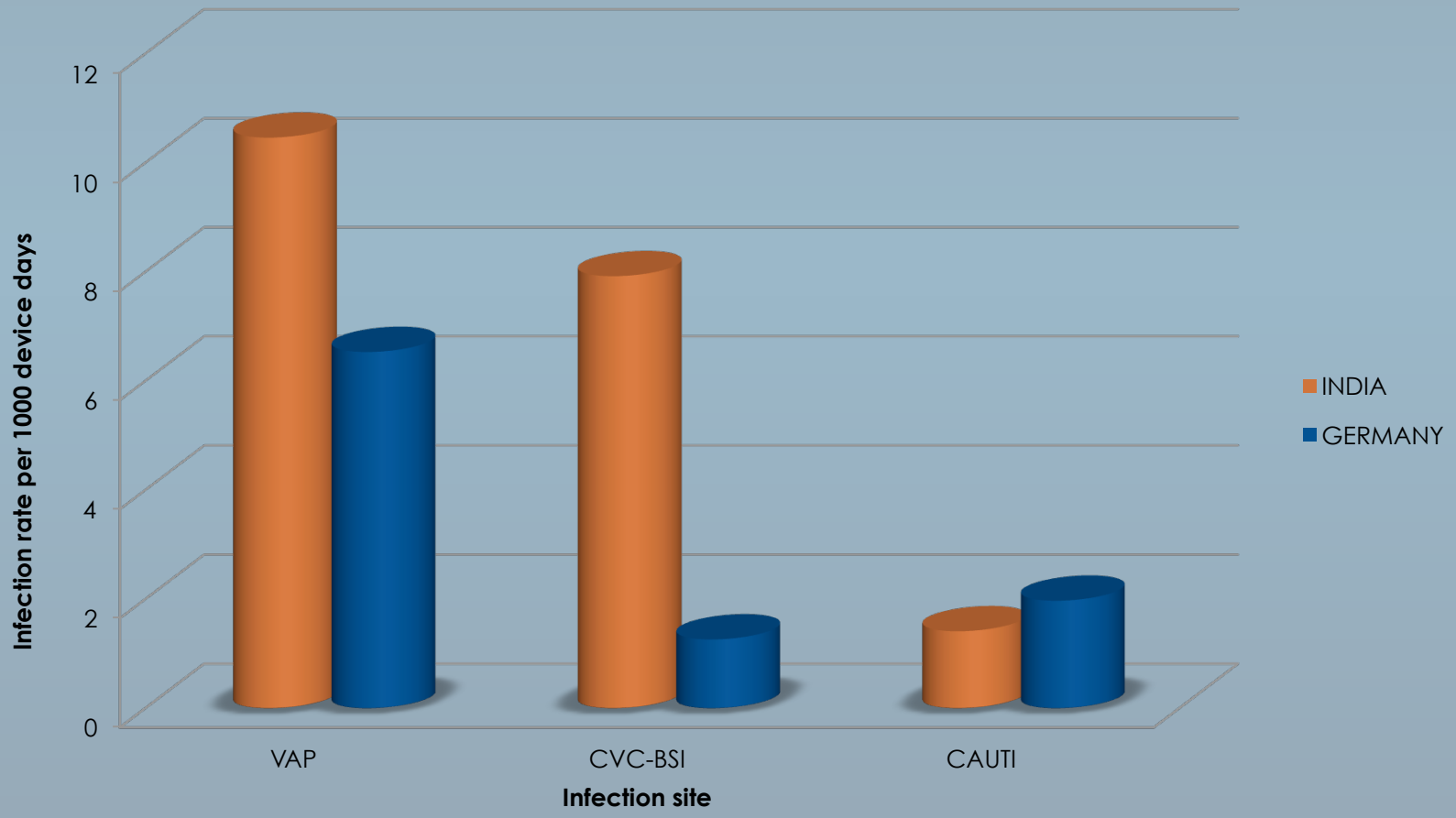
In-service training for physicians/pharmacists

- Interactive Continuing Medical Education workshops
- Long-term impact?

Distribute Standard Treatment Guidelines to Hospital Staff

- Assist hospitals in personalizing guidelines and making drug-bug pocket cards
- Need to convince physicians to adhere to guidelines

Healthcare-associated infections in ICUs in India (2004-7) and Germany (2006-7)



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Data source: Geffers C, Gastmeier P. (2011). Dtsch Arztebl Int. 2011;108(6):87–93. Mehta, A., V. D., Rosenthal et al. (2007). The Journal of hospital infection **67**(2): 168-174.

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Other Hospital-Based Interventions

Strengthen Infection Control Committees

- Empower to coordinate isolation, conduct audits
- Secure support of top administrators—call upon top hospital management to engage counterparts in other hospitals
- Concerns: unavailability of infrastructure, ineffective committees

Increased use of diagnostic tests

- Alliances between hospitals
- Financing mechanisms to encourage testing when appropriate
- Concerns: Time lag between testing and results, persuading doctors and patients of their worth

GARP-INDIA: FUTURE DIRECTIONS

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Written output

- Summary paper in the *Indian Journal of Medical Research*: September 2011
- Situation Analysis: March 2011
- Final Report for all GARP countries: forthcoming
- Papers on GARP-India studies: forthcoming

Developing critical paths to implementation of GARP and Task Force recommendations

- Testing interventions where necessary
- Mapping the way towards implementation for some interventions

Global collaboration with GARP partners and others


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THANK YOU!